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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants:	Kemal GULER et al.	§	Confirmation No.: 2098
		§	
Serial No.:	09/904,311	§	Group Art Unit: 1762
		§	
Filed:	07/11/2001	§	Examiner: A. L. Bashore
		§	
For:	Joint Estimation Of	§	Docket No.: 10014420-1
	Bidders' Risk Attitudes	§	
	And Private Information	§	

I hereby certify that this paper is being transmitted to the Patent and Trademark Office facsimile number (571) 273-8300.
Date of facsimile: 03/10/2006
Typed Name: Colleen F. Brown
Signature: _Colleen F. Brown_

RESPONSE TO NOTIFICATION OF
NON-COMPLIANT APPEAL BRIEF (37 CFR 41.37)

Mail Stop Appeal Brief – Patents   March 10, 2006
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Notification of Non-Compliant Appeal Brief dated February 13, 2006, Appellants submit a complete new Appeal Brief. In said Notice, the Examiner objected to Appellants' Appeal Brief filed December 20, 2005, because it allegedly "fails to: (1) identify, for each independent claim involved in the appeal and for each dependent claim argued separately, every means plus function and step plus function under 35 U.S.C. § 112, sixth paragraph, and/or (2) set forth the structure, material, or acts described in the specification as corresponding to each claimed function with reference to the specification by page and line number, and to the drawings, if any, by reference characters (37 CFR 41.37(c)(1)(v))." A new Appeal Brief is submitted herewith that comports with this rule.

Respectfully submitted,

Ellen Baker

HEWLETT-PACKARD COMPANY   Ellen Baker
Intellectual Property Administration   PTO Reg. No. 50,272
Legal Dept., M/S 35   CONLEY ROSE, P.C.
P.O. Box 272400   (713) 238-8000 (Phone)
Fort Collins, CO 80527-2400   ATTORNEY FOR APPELLANTS

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Signature:

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Date: March 10, 2006

Sir:

Appellants hereby submit this Appeal Brief in connection with the above-identified application. A Notice of Appeal was filed via facsimile on November 3, 2005.

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Appeal Brief dated March 10, 2006
Reply to Notice of Non-Compliance of February 13, 2006

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I. REAL PARTY IN INTEREST

The real party in interest is the Hewlett-Packard Development Company (HPDC), a Texas Limited Partnership, having its principal place of business in Houston, Texas. HPDC is a wholly owned affiliate of Hewlett-Packard Company (HPC). The Assignment from the inventors to HPC was recorded on January 14, 2002, at Reel/Frame 012489/0132. The Assignment from HPC to HPDC was recorded on September 30, 2003, at Reel/Frame 014061/0492.

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II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

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III.   STATUS OF THE CLAIMS

Originally filed claims: 1-21.

Claim cancellations: 1-21.

Added claims: 22-47.

Presently pending claims: 22-47.

Presently appealed claims: 22, 26, 30, 34, 39, 42.

The Examiner concluded that all of the other pending claims contained allowable subject matter, and thus such claims are not presently appealed.

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IV.   STATUS OF THE AMENDMENTS

No claims were amended after the final Office action dated September 7, 2005.

V.   SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed inventions are directed to methods and systems for determining "the unobservable risk attitudes and private information of bidders" in auctions without requiring ad hoc, a priori assumptions on the functional forms of these unknowns. ¶ 0063.   Accordingly, the invention of claim 22 provides a method for determining private information and risk attitudes, the method comprising accessing auction data from previously conducted auctions from computer system memory. See Fig. 4, ¶ 0050. The auction data comprises bids submitted in utility-dependent auctions, the utility-dependent auctions comprising auctions in which bidding behavior depends on risk attitudes. See Fig. 4, ¶¶ 0051, 0055. The auction data also comprises bids submitted in utility-independent auctions, the utility-independent auctions comprising auctions in which bidding behavior does not depend on risk attitudes. See Fig. 4, ¶ 0051. The method further comprises determining private information using the bids submitted in the utility-independent auctions, and determining risk attitudes using the private information and the bids submitted in the utility-dependent auctions. See Fig. 4, ¶¶ 0053, 0055-0057.

Claim 26 is directed to a computer system comprising storage that contains auction data from previously conducted auctions. See Fig. 1, ¶¶ 0026, 0029. This auction data comprises bids submitted in utility-dependent auctions and bids submitted in utility-independent auctions.   See ¶¶ 0040-0041.   The utility-dependent auctions comprise auctions in which bidding behavior depends on risk attitudes, and the utility-independent auctions comprise auctions in which bidding behavior does not depend on risk attitudes. See ¶ 0010. The computer system also includes a processor that can access the storage. See Fig. 1, ¶ 0026. The processor determines private information using the bids submitted in utility-independent auctions. See ¶¶ 0042, 0053. The processor also determines risk attitudes using the private information and the bids submitted in utility-dependent auctions. See ¶¶ 0042, 0055-0057.

In the invention of claim 30, a storage medium stores instructions that, when executed by a processor, cause the processor to retrieve auction data

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from previously conducted auctions. See Fig. 1, Fig. 4, ¶¶ 0026, 0049-0050. The auction data comprises bids submitted in utility-dependent auctions, and bids submitted in utility-independent auctions. See Fig. 4, ¶¶ 0051, 0055. The storage medium also stores instructions that cause the processor to estimate private information using the bids submitted in the utility-independent auctions. See Fig. 4, ¶ 0053. Additional stored instructions cause the processor to estimate risk attitudes based on the private information and the bids submitted in the utility-dependent auctions. See Fig. 4, ¶¶ 0055-0057. The utility-dependent auctions comprise auctions in which bidding behavior depends on risk attitudes, and the utility-independent auctions comprise auctions in which bidding behavior does not depend on risk attitudes. See ¶ 0010.

In accordance with the invention of claim 34, an auction design system comprises a storage device containing an historical auction database. See Fig. 1, Fig. 2, ¶¶ 0026, 0040. The historical auction database comprises utility-dependent auction data for a plurality of utility-dependent auctions, such auctions comprising auctions in which bidding behavior depends on risk attitudes of a first plurality of bidders. See ¶ 0040. The historical auction database also comprises utility-independent auction data for a plurality of utility-independent auctions, such auctions comprising auctions in which bidding behavior does not depend on risk attitudes of a second plurality of bidders. See ¶ 0040. The auction design system further comprises means for determining market structure, wherein private information for the second plurality of bidders is determined using the utility-independent auction data, and risk attitudes for the first plurality of bidders is determined using the private information and the utility-dependent auction data. See ¶ 0042.

Claim 39 provides a method for analyzing auction data that comprises determining private information for a first plurality of bidders using utility-independent auction data stored in a computer system. See Fig. 4, ¶¶ 0049, 0053. The utility-independent auction data comprises auction data from a plurality of auctions in which bidding behavior does not depend on risk attitudes of the first plurality of bidders. See ¶ 0010. The method further comprises determining risk

attitudes for a second plurality of bidders using the private information and utility-dependent auction data stored in the computer system. See Fig. 4, ¶¶ 0055-0057. The utility-dependent auction data comprises auction data from a plurality of auctions in which bidding behavior depends on the risk attitudes of the second plurality of bidders. See ¶ 0010.

Claim 42 recites a method for analyzing auction data that comprises accessing utility-independent auction data and utility-dependent auction data from an auction database. See Fig. 4, ¶¶ 0049-0050. In this auction database, the utility-independent auction data comprises data from auctions in which bidding behavior does not depend on risk attitudes, and the utility-dependent auction data comprises data from auctions in which bidding behavior depends on risk attitudes. See ¶¶ 0051, 0055. The method further comprises determining a joint distribution function that represents private information of a first plurality of bidders using the utility-independent auction data, and determining a utility of wealth function of a second plurality of bidders using the joint distribution function and the utility-dependent auction data. See Fig. 4, ¶¶ 0053, 0055-0057.

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VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 22, 26, 30, 34, 39, and 42 are obvious over Bansal et al. (U.S. Pat. App. No. 2003/009421) in view of Hogg et al. (U.S. Pat. App. No. 2002/0073009).

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VII.   ARGUMENT

In the discussion below, Appellants refer to several documents to support Appellants' arguments. These documents are as follows: "A Theory of Auctions and Competitive Bidding," Milgrom, Paul R. & Weber, Robert J., *Econometrica*, Vol. 30, No. 5 (Sept. 1982), pp. 1089-1122, herein referred to as Milgrom; "Auctions and Bidding," R. Preston McAfee & John McMillan, *Journal of Economic Literature*, Vol. XXV (June 1987), pp. 699-738, herein referred to as McAfee; "Semiparametric Estimation of First-Price Auctions with Risk Averse Bidders," Campo, Sandra, et al., (Oct. 2000), herein referred to as Campo; and "Optimal Auctions With Risk Averse Buyers," Maskin, Eric & Riley, John, *Econometrica*, Vol. 52, No. 6 (Nov. 1984), pp. 1473-1518, herein referred to as Maskin. These documents were provided to the Examiner with previously submitted Information Disclosure Statements.

A.   Claims 22, 26, 30, 34, 39, 42

Appellants select claim 22 as representative of this group of claims. This grouping is for purposes of this appeal only, and should not be construed to mean the patentability of any of the claims may be determined, in later actions before a court, based on the grouping.

The Examiner erred in rejecting claim 22 as being obvious over Bansal et al. in view of Hogg et al. for at least three reasons. First, the cited art does not teach or suggest every limitation of the claimed invention. Second, the Examiner has not provided a sufficient motivation or suggestion for combining the cited art. And, third, prior art "teaches away" from the claimed invention.

1.   The Cited Art Does Not Teach or Suggest Every Limitation of the Claimed Invention

Claim 22 is a method claim that requires, among other limitations, "determining private information using the bids submitted in the utility-independent auctions; and determining risk attitudes using the private information and the bids submitted in the utility-dependent auctions." Appellants submit that the art of record does not teach or even suggest the above-cited combination of limitations.

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The Examiner asserts that Bansal discloses that auction data from previously conducted auctions is analyzed and risk attitudes for bidders are determined. As is described in Appellants' specification, and as is well-known by one of ordinary skill in the art, the term risk attitude (or, alternatively, risk aversion) refers to an unknown or unobservable element of the market structure of an auction that represents the attitude of bidders toward risk. (See Appellants' Specification, ¶ 0038; see also, e.g., Maskin, Campo, and MacAfee.) "Risk attitude is represented by a utility of wealth function, $U(w)$. If a bidder with a private valuation, v_i, and current wealth, w, wins the item at a price, b, his utility of winning the auction is $U(w + v_i - b)$ and his utility of not winning is $U(w)$. A concave function $U()$ indicates risk aversion, whereas a linear utility of wealth function characterizes risk neutrality." (Appellants' Specification, ¶ 0056.)

Bansal does not teach or suggest determining risk attitudes as required by claim 22. At most, Bansal appears to teach a market intermediary that receives a position from a buyer or a seller, obtains information on risk classes for the buyer and/or seller relevant to the new position, and computes risk premium charges that correspond to the obtained risk classes. See ¶¶ 0149, 0156, 0163. Risk classes as disclosed by Bansal are indicators of the creditworthiness and reliability with regard to delivery and adherence to quality and other specifications of the buyer and/or seller. See ¶ 0006. A risk classification reflects the "estimated uncertainty of the opposite party fulfilling its obligation." ¶ 0026. A risk premium charge is an amount a buyer must pay in addition to a base price, or a seller must deduct from the base price, due to the "uncertainty in the minds of the counterparty that the buyer (or seller) might not fulfill its obligations." ¶ 0140. Clearly, neither risk classes nor risk premiums are risk attitudes as required by claim 22. Furthermore, Hogg does not teach this requirement. For at least these reasons, the Examiner erred in rejecting claim 22 as being obvious over Bansal in view of Hogg.

2. The Examiner Has Not Provided A Sufficient Motivation Or Suggestion For Combining The Cited Art

As the Federal Circuit has stated, "[o]ur case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999). Further, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992).

Appellants submit that the Examiner has failed to establish sufficient motivation to combine the alleged teachings of Bansal and Hogg. The Examiner's stated reason for combining Bansal and Hogg is as follows:

> It would have been obvious to one with ordinary skill in the art to include determining private information for the bidders submitted in a utility-independent auction **because Hogg et al teaches that important information may be gathered from such information in any auction (para 0005) and because Hogg et al teaches variability in information needed (para 0024)**

Office Action, page 3 (emphasis added). The Examiner has overly generalized the cited paragraphs of Hogg. Paragraph 0005 merely teaches that latent demand for a commodity may be determined by analyzing unaccepted offers for each of a plurality of commodities and then selecting one of these commodities to offer for sale that fulfills at least one criterion from the analysis. Paragraph 0024 merely teaches varying the number of offers or bids that may be gathered from one or more auction systems to determine latent demand for a commodity.

3. Prior Art "Teaches Away" From the Claimed Invention

The Federal Circuit has stated that

> "[a] prima facie case of obviousness can be rebutted if the applicant ... can show 'that the art in any material respect taught away' from the claimed invention." *In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) (quoting In re Malagari, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)). "A reference may be said to teach away when a person of ordinary

skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the applicant." Tec *Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1360, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999)"

In re Haruna, 249 F.3d 1327, 1335 (Fed. Cir. 2001)(reversing a decision by the United States Board of Patent Appeals on the basis that prior art taught away from the claimed invention).

Claim 22 requires the determination of private information using bids submitted in utility-independent auctions, and the determination of risk attitudes using this private information and bids submitted in utility-dependent auctions. Campo documents an analysis as to whether the structural elements of an auction, i.e., private information and risk attitudes, may be uniquely recovered from observed bids. Campo concludes that observed bids do not contain enough information to determine these unknown elements. (See Campo, pages 2, 5-7.) Therefore, one of ordinary skill in the art reading Campo would not be led to Appellants' claimed invention. Campo thus teaches away from Appellants' claimed invention. For this reason alone, claim 22 should be allowed over the prior art.

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VIII. CONCLUSION

For the reasons stated above, Appellants respectfully submit that the Examiner erred in rejecting claims 22, 26, 30, 34, 39, and 42. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

Respectfully submitted,

Ellen Baker
PTO Reg. No. 50,272
CONLEY ROSE, P.C.
(713) 238-8000 (Phone)
(713) 238-8008 (Fax)
ATTORNEY FOR APPELLANTS

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
Legal Dept., M/S 35
P.O. Box 272400
Fort Collins, CO 80527-2400

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IX.   CLAIMS APPENDIX

1.-21. (Canceled).

22.   (Previously presented) A method for determining private information and risk attitudes comprising:

>   accessing, from computer system memory, auction data from previously conducted auctions, wherein the auction data comprises bids submitted in utility-dependent auctions and bids submitted in utility-independent auctions, wherein the utility-dependent auctions comprise auctions in which bidding behavior depends on risk attitudes and the utility-independent auctions comprise auctions in which bidding behavior does not depend on risk attitudes;

>   determining private information using the bids submitted in the utility-independent auctions; and

>   determining risk attitudes using the private information and the bids submitted in the utility-dependent auctions.

23.   (Previously presented) The method of claim 22, wherein determining private information further comprises using statistical density estimation techniques to nonparametrically estimate a joint distribution of private information.

24.   (Previously presented) The method of claim 22, wherein determining risk attitudes further comprises using quantile matching to nonparametrically estimate the risk attitudes.

25.   (Previously presented) The method of claim 22, wherein the utility-independent auctions and the utility-dependent auctions further comprise auctions for a same type of item.

26.   (Previously presented) A computer system comprising:

storage that contains auction data from previously conducted auctions, wherein the auction data comprises bids submitted in utility-dependent auctions and bids submitted in utility-independent auctions, wherein the utility-dependent auctions comprise auctions in which bidding behavior depends on risk attitudes and the utility-independent auctions comprise auctions in which bidding behavior does not depend on risk attitudes; and

a processor that can access the storage, wherein the processor determines private information using the bids submitted in utility-independent auctions, and determines risk attitudes using the private information and the bids submitted in utility-dependent auctions.

27.   (Previously presented) The computer system of claim 26, wherein the processor determines the private information using statistical density estimation techniques to nonparametrically estimate a joint distribution of the private information.

28.   (Previously presented) The computer system of claim 26, wherein the processor determines risk attitudes using quantile matching to nonparametrically estimate the risk attitudes.

29.   (Previously presented) The computer system of claim 26, wherein the utility-independent auctions and the utility-dependent auctions further comprise auctions for a same type of item.

30.   (Previously presented) A storage medium storing instructions that, when executed by a processor, cause the processor to:

retrieve auction data from previously conducted auctions, wherein the auction data comprises bids submitted in utility-dependent auctions and bids submitted in utility-independent auctions;

estimate private information using the bids submitted in the utility-
independent auctions; and

estimate risk attitudes based on the private information and the bids
submitted in the utility-dependent auctions, wherein the utility-
dependent auctions comprise auctions in which bidding behavior
depends on risk attitudes, the utility-independent auctions comprise
auctions in which bidding behavior does not depend on risk
attitudes.

31.   (Previously presented) The storage medium of claim 30, wherein the
instructions further cause the processor to apply statistical density estimation
techniques to nonparametrically estimate the joint distribution of the private
information.

32.   (Previously presented) The storage medium of claim 30, wherein the
instructions further cause the processor to apply quantile matching to
nonparametrically estimate the risk attitudes.

33.   (Previously presented) The storage medium of claim 30, wherein the utility-
independent auctions and the utility-dependent auctions further comprise auctions
for a same type of item.

34.   (Previously presented) An auction design system, comprising:

a storage device containing an historical auction database comprising
utility-dependent auction data for a plurality of utility-dependent
auctions and utility-independent auction data for a plurality of utility-
independent auctions, wherein the plurality of utility-dependent
auctions comprises auctions in which bidding behavior depends on
risk attitudes of a first plurality of bidders and the plurality of utility-
independent auctions comprises auctions in which bidding behavior

does not depend on risk attitudes of a second plurality of bidders;
and

means for determining market structure, wherein private information for the
second plurality of bidders is determined using the utility-
independent auction data, and risk attitudes for the first plurality of
bidders is determined using the private information and the utility-
dependent auction data.

35.   (Previously presented) The auction design system of claim 34, wherein the
means for determining market structure uses statistical density estimation
techniques to nonparametrically estimate the joint distribution of the private
information, and uses the joint distribution to nonparametrically estimate the risk
attitudes.

36.   (Previously presented) The auction design system of claim 34, further
comprising:
        means for predicting bidding behavior for an auction decision candidate
        using the private information and the risk attitudes.

37.   (Previously presented) The auction design system of claim 36, wherein
        the storage device contains a bidding model database comprising auction
        bidding models; and
        the means for predicting the bidding behavior further receives an auction
        decision candidate and constraints, selects a bidding model from the
        bidding model database using the auction decision candidate and
        constraints, and applies the private information and the risk attitudes
        to the bidding model to predict the bidding behavior.

38.   (Previously presented) The auction design system of claim 37, further comprising:

> means for generating an evaluation of the auction decision candidate using the predicted bidding behavior, the private information, and the risk attitudes.

39.   (Previously presented) A method for analyzing auction data comprising:

> determining private information for a first plurality of bidders using utility-independent auction data stored in a computer system, the utility-independent auction data comprising auction data from a plurality of auctions in which bidding behavior does not depend on risk attitudes of the first plurality of bidders; and

> determining risk attitudes for a second plurality of bidders using the private information and utility-dependent auction data stored in the computer system, the utility-dependent auction data comprising auction data from a plurality of auctions in which bidding behavior depends on the risk attitudes of the second plurality of bidders.

40.   (Previously presented) The method of claim 39, wherein

> determining private information further comprises nonparametrically estimating the joint distribution of the private information; and

> determining risk attitudes further comprises nonparametrically estimating the risk attitudes using the joint distribution.

41.   (Previously presented) The method of claim 39, wherein the plurality of auctions in which bidding behavior depends on the risk attitudes and the plurality of auctions in which bidding behavior does not depend on the risk attitudes further comprise auctions for a same type of item.

42.   (Previously presented) A method for analyzing auction data comprising:

accessing utility-independent auction data and utility-dependent auction data from an auction database, wherein the utility-independent auction data comprises data from auctions in which bidding behavior does not depend on risk attitudes and the utility-dependent auction data comprises data from auctions in which bidding behavior depends on risk attitudes;

determining a joint distribution function that represents private information of a first plurality of bidders using the utility-independent auction data; and

determining a utility of wealth function of a second plurality of bidders using the joint distribution function and the utility-dependent auction data.

43.   (Previously presented) The method of claim 42, wherein the auctions in which bidding behavior depends on risk attitudes and the auctions in which bidding behavior does not depend on risk attitudes further comprise auctions of a same type of item.

44.   (Previously presented) The method of claim 42, wherein determining a joint distribution function further comprises using statistical density estimation techniques to nonparametrically estimate the joint distribution of the private information.

45.   (Previously presented) The method of claim 22, wherein accessing, from computer system memory, auction data further comprises accumulating the auction data into sets as a function of auction type, a first auction type being utility-dependent and a second auction type being utility-independent.

46.   (Previously presented) The computer system of claim 26, wherein the processor is further configured to accumulate the auction data into sets as a

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function of auction type, a first auction type being utility-dependent and a second auction type being utility-independent.

47.   (Previously presented) The storage medium of claim 30, wherein the instructions further cause the processor to accumulate the auction data into sets as a function of auction type, a first auction type being utility-dependent and a second auction type being utility-independent.

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X.   EVIDENCE APPENDIX

None.

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XI.   RELATED PROCEEDINGS APPENDIX

None.